

WHAT IS CLAIMED IS:

1. An image processing apparatus comprising:  
input means for inputting color image data;  
first storage means for storing the color image  
5 data;  
generating means for generating flag data  
indicating an attribute of an image corresponding to  
the color image data from the color image data;  
second storage means for storing the generated  
10 flag data;  
compressing means for compressing the image data  
stored in said first storage means and the flag data  
stored in said second storage means;  
third storage means for storing the image data and  
15 flag data compressed by said compressing means;  
decompressing means for decompressing the image  
data and flag data read out from said third storage  
means;  
first pixel density converting means for pixel  
20 density converting the image data decompressed by said  
decompressing means at a designated magnification;  
second pixel density converting means for pixel  
density converting the flag data decompressed by said  
decompressing means at same magnification as the  
25 designated magnification; and  
output means for making a process of the pixel  
density converted image data different every pixel in

accordance with the flag data and outputting the processed image data.

2. An apparatus according to claim 1, wherein  
5 said flag data is a character flag indicative of a character image, a figure flag indicative of a figure image, and a mesh flag indicative of a mesh image.

3. An apparatus according to claim 1, wherein  
10 when said flag data is a character flag, said output means performs a sharpness emphasis to said image data.

4. An apparatus according to claim 1, wherein  
15 when said flag data is a mesh flag, said output means performs a low pass filter process to said image data.

5. An apparatus according to claim 1, wherein  
said compressing means performs an irreversible  
compression for making a deterioration of an image  
20 inconspicuous to the image data in consideration of human perception characteristics.

6. An apparatus according to claim 1, wherein  
said compressing means performs a reversible  
25 compression to the flag data.

7. An apparatus according to claim 1, wherein

said generating means generates the flag data on the basis of a change in image data of a pixel near a target pixel.

5           8. An apparatus according to claim 1, wherein said first pixel density converting means uses one of a linear interpolating method and bicubic spline interpolation.

10           9. An apparatus according to claim 1, wherein said second pixel density converting means performs a resolution conversion suitable for binary data.

15           10. An apparatus according to claim 2, wherein said output means makes a binarizing process to the image data different in accordance with the flag data.

20           11. An apparatus according to claim 10, wherein when said flag data is the character flag or figure flag, an error diffusion process is performed to the image data.

25           12. An apparatus according to claim 1, wherein said output means changes color conversion coefficients in accordance with the flag data and performs a color converting process of the image data.

13. An apparatus according to claim 1, wherein  
said first pixel density converting means performs a  
converting process by performing an interpolating  
process from a plurality of pixels near a target pixel,  
5 said second pixel density converting means performs a  
logical arithmetic operating process of flag values of  
a plurality of pixels near the target pixel, a process  
using a nearest neighboring pixel of the target pixel,  
or a converting process using a result obtained by  
10 counting the flag data of the pixels around the near  
pixels.

14. An apparatus according to claim 1, wherein in  
the case where said input means inputs data described  
15 by a page description language from a computer, said  
generating means generates the flag data on the basis  
of attribute information of the page description  
language.

20 15. An apparatus according to claim 1, wherein  
said second pixel density converting means makes a  
converting method different in accordance with  
attributes of said flag data.

25 16. An apparatus according to claim 15, wherein  
said second pixel density converting means switches a  
logical arithmetic operating process of flag values of

a plurality of pixels near a target pixel, a process using a nearest neighboring pixel of the target pixel, and a process using a result obtained by counting flag data around the near pixels.

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17. An image processing method comprising the steps of:

inputting color image data;

10 storing the inputted color image data into first storage means;

generating flag data indicating an attribute of an image corresponding to the color image data from the color image data;

15 storing the generated flag data into second storage means;

compressing the image data stored in said first storage means and the flag data stored in said second storage means;

20 storing the compressed image data and the compressed flag data into third storage means;

decompressing the image data and flag data read out from said third storage means;

pixel density converting the decompressed image data at a designated magnification;

25 pixel density converting the decompressed flag data at same magnification as the designated magnification; and

making a process of the pixel density converted image data different every pixel in accordance with said flag data and outputting the processed image data to a printer.

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18. A computer-readable storage medium which stored a program for allowing an image processing apparatus to execute said program comprising the steps of:

10       inputting color image data;

          storing said inputted color image data into first storage means;

          generating flag data indicating an attribute of an image according to the color image data from the color  
15       image data;

          storing the generated flag data into second storage means;

          compressing the image data stored in said first storage means and the flag data stored in said second  
20       storage means;

          storing the compressed image data and the compressed flag data into third storage means;

          decompressing the image data and flag data read out from said third storage means;

25       pixel density converting the decompressed image data at a designated magnification;

          pixel density converting the decompressed flag

data at same magnification as the designated  
magnification; and

making a process of the pixel density converted  
image data different every pixel in accordance with the  
5 flag data and outputting the processed image data to a  
printer.

19. An image processing apparatus comprising:  
reading means for color separating an original  
10 image and reading as color digital signals of each  
pixel;

input means for inputting data described by a page  
description language from a computer;

analyzing means for analyzing data inputted by  
15 said input means, rasterizing said data into image data  
in a bit map format, and generating attribute  
information of the rasterized image data as flag data;

first storage means for temporarily storing the  
read color image signals of R, G, and B and the image  
20 data in the bit map format rasterized by said analyzing  
means;

detecting means for detecting a feature amount of  
each pixel of the original image in parallel with the  
reading operation of the original by said reading  
25 means;

generating means for generating flag data for  
identifying an attribute of the pixel from the detected

feature amount;

second storage means for storing the flag data generated by said generating means and the flag data generated by said analyzing means;

5 first pixel density converting means for pixel density converting said image data at a designated magnification;

second pixel density converting means for pixel density converting said flag data at a same  
10 magnification as the designated magnification; and

control means for reading out the image data stored in said first storage means and the flag data stored in said second storage means, converting pixel densities of said read-out data by said first and  
15 second pixel density converting means, and thereafter, processing the image data on a pixel unit basis in accordance with the flag data, transferring the processed image data to a printer, and allowing said printer to form a color image.